



General

Guideline Title

Guideline for the prevention and control of norovirus gastroenteritis outbreaks in healthcare settings.

Bibliographic Source(s)

MacCannell T, Umscheid CA, Agarwal RK, Lee I, Kuntz G, Stevenson KB, Healthcare Infection Control Practices Advisory Committee (HICPAC). Guidelines for the prevention and control of norovirus gastroenteritis outbreaks in healthcare settings. Atlanta (GA): Centers for Disease Control and Prevention; 2011. 52 p. [207 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

Definitions for the categorization scheme for the recommendations (IA, IB, IC, II) are provided at the end of the "Major Recommendations" field.

Patient Cohorting and Isolation Precautions

1. Avoid exposure to vomitus or diarrhea. Place patients on Contact Precautions in a single occupancy room if they have symptoms consistent with norovirus gastroenteritis. (Category IB)
 - When patients with norovirus gastroenteritis cannot be accommodated in single occupancy rooms, efforts should be made to separate them from asymptomatic patients. Dependent upon facility characteristics, approaches for cohorting patients during outbreaks may include placing patients in multi-occupancy rooms, or designating patient care areas or contiguous sections within a facility for patient cohorts. (Category IB)
2. During outbreaks, place patients with norovirus gastroenteritis on Contact Precautions for a minimum of 48 hours after the resolution of symptoms to prevent further exposure of susceptible patients. (Category IB)
 - Consider longer periods of isolation or cohorting precautions for complex medical patients (e.g., those with cardiovascular, autoimmune, immunosuppressive, or renal disorders) as they can experience protracted episodes of diarrhea and prolonged viral shedding. Patients with these or other comorbidities have the potential to relapse, and facilities may choose longer periods of isolation based on clinical judgment. (Category II)
 - Consider extending the duration of isolation or cohorting precautions for outbreaks among infants and young children (e.g., under 2 years), even after resolution of symptoms, as there is a potential for prolonged viral shedding and environmental contamination. Among infants, there is evidence to consider extending contact precautions for up to 5 days after the resolution of symptoms.

(Category II)

3. Further research is needed to understand the correlation between prolonged shedding of norovirus and the risk of infection to susceptible patients. (No recommendation/unresolved issue)
4. Consider minimizing patient movements within a ward or unit during norovirus gastroenteritis outbreaks. (Category II)
 - Consider restricting symptomatic and recovering patients from leaving the patient-care area unless it is for essential care or treatment to reduce the likelihood of environmental contamination and transmission of norovirus in unaffected clinical areas. (Category II)
5. Consider suspending group activities (e.g., dining events) for the duration of a norovirus outbreak. (Category II)
6. Staff who have recovered from recent suspected norovirus infection associated with an outbreak may be best suited to care for symptomatic patients until the outbreak resolves. (Category II)

Hand Hygiene

7. Actively promote adherence to hand hygiene among healthcare personnel, patients, and visitors in patient care areas affected by outbreaks of norovirus gastroenteritis. (Category IB)
8. During outbreaks, use soap and water for hand hygiene after providing care or having contact with patients suspected or confirmed with norovirus gastroenteritis. (Category IB)
 - For all other hand hygiene indications (e.g., before having contact with norovirus patients) refer to the 2002 Healthcare Infection Control Practices Advisory Committee (HICPAC) Guideline for Hand Hygiene in Health-Care Settings (<http://www.cdc.gov/mmwr/PDF/rr/rr5116.pdf> [redacted]), which includes the indications for use of FDA-compliant alcohol-based hand sanitizer. (Category IB)
 - Consider ethanol-based hand sanitizers (60-95%) as the preferred active agent compared to other alcohol or non-alcohol based hand sanitizer products during outbreaks of norovirus gastroenteritis. (Category II)
 - Further research is required to directly evaluate the efficacy of alcohol-based hand sanitizers against human strains of norovirus, or against a surrogate virus with properties convergent with human strains of norovirus. (No recommendation/unresolved issue)
9. More research is required to evaluate the virucidal capabilities of alcohol-based as well as non-alcohol based hand sanitizers against norovirus. (No recommendation/unresolved issue)

Patient Transfer and Ward Closure

10. Consider the closure of wards to new admissions or transfers as a measure to attenuate the magnitude of an outbreak of norovirus gastroenteritis. The threshold for ward closure varies and depends on risk assessments by infection prevention personnel and facility leadership. (Category II)
11. Consider limiting transfers to those for which the receiving facility is able to maintain Contact Precautions; otherwise, it may be prudent to postpone transfers until patients no longer require Contact Precautions. During outbreaks, medically suitable individuals recovering from norovirus gastroenteritis can be discharged to their place of residence. (Category II)
12. Implement systems to designate patients with symptomatic norovirus and to notify receiving healthcare facilities or personnel prior to transfer of such patients within or between facilities. (Category IC)

Indirect Patient Care Staff-- Food Handlers in Healthcare

13. To prevent food-related outbreaks of norovirus gastroenteritis in healthcare settings, food handlers must perform hand hygiene prior to contact with or the preparation of food items and beverages (<http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/default.htm> [redacted]). (Category IC)
14. Personnel who work with, prepare, or distribute food must be excluded from duty if they develop symptoms of acute gastroenteritis. Personnel should not return to these activities until a minimum of 48 hours after the resolution of symptoms or longer as required by local health regulations (<http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/default.htm> [redacted]). (Category IC)
15. Remove all shared or communal food items for patients or staff from clinical areas for the duration of the outbreak. (Category IB)

Diagnostics

16. Consider the development and adoption of facility policies to enable rapid clinical and virological confirmation of suspected cases of symptomatic norovirus infection while implementing prompt control measures to reduce the magnitude of a potential norovirus outbreak. (Category II)
17. In the absence of clinical laboratory diagnostics or in the case of delay in obtaining laboratory results, use Kaplan's clinical and

epidemiologic criteria to identify a norovirus gastroenteritis outbreak (see Table 4 in the original guideline document for Kaplan's criteria). (Category IA)

18. Further research is needed to compare the Kaplan criteria with other early detection criteria for outbreaks of norovirus gastroenteritis in healthcare settings, and to assess whether additional clinical or epidemiologic criteria can be applied to detect norovirus clusters or outbreaks in healthcare settings. (No recommendation/unresolved issue)
19. Consider submitting stool specimens as early as possible during a suspected norovirus gastroenteritis outbreak and ideally from individuals during the acute phase of illness (within 2-3 days of onset). It is suggested that healthcare facilities consult with state or local public health authorities regarding the types of and number of specimens to obtain for testing. (Category II)
20. Use effective laboratory diagnostic protocols for testing of suspected cases of viral gastroenteritis (e.g., refer to the Centers for Disease Control and Prevention [CDC]'s most current recommendations for norovirus diagnostic testing at <http://www.cdc.gov/mmwr/pdf/rr/rr6003.pdf> [redacted]). (Category IB)
21. Routine collecting and processing of environmental swabs during a norovirus outbreak is not required. When supported by epidemiologic evidence, environmental sampling can be considered useful to confirm specific sources of contamination during investigations. (Category II)
22. Specimens obtained from vomitus can be submitted for laboratory identification of norovirus when fecal specimens are unavailable. Testing of vomitus as compared to fecal specimens can be less sensitive due to lower detectable viral concentrations. (Category II)

Personal Protective Equipment

23. If norovirus infection is suspected, adherence to personal protective equipment (PPE) use according to Contact and Standard Precautions is recommended for individuals entering the patient care area (i.e., gowns and gloves upon entry) to reduce the likelihood of exposure to infectious vomitus or fecal material. (Category IB)
24. Use a surgical or procedure mask and eye protection or a full face shield if there is an anticipated risk of splashes to the face during the care of patients, particularly among those who are vomiting. (Category IB)
25. More research is needed to evaluate the utility of implementing Universal Gloving (e.g., routine use of gloves for all patient care) during norovirus outbreaks. (No recommendation/unresolved issue)

Environmental Cleaning

26. Perform routine cleaning and disinfection of frequently touched environmental surfaces and equipment in isolation and cohorted areas, as well as high-traffic clinical areas. Frequently touched surfaces include, but are not limited to, commodes, toilets, faucets, hand/bedrailing, telephones, door handles, computer equipment, and kitchen preparation surfaces. (Category IB)
27. Clean and disinfect shared equipment between patients using Environmental Protection Agency (EPA)-registered products with label claims for use in healthcare. Follow the manufacturer's recommendations for application and contact times. The EPA lists products with activity against norovirus on their website (<http://www.epa.gov/oppad001/chemregindex.htm> [redacted]). (Category IC)
28. Increase the frequency of cleaning and disinfection of patient care areas and frequently touched surfaces during outbreaks of norovirus gastroenteritis (e.g., increase ward/unit level cleaning to twice daily to maintain cleanliness, with frequently touched surfaces cleaned and disinfected three times daily using EPA-approved products for healthcare settings). (Category IB)
29. Clean and disinfect surfaces starting from the areas with a lower likelihood of norovirus contamination (e.g., tray tables, counter tops) to areas with highly contaminated surfaces (e.g., toilets, bathroom fixtures). Change mop heads when a new bucket of cleaning solution is prepared, or after cleaning large spills of emesis or fecal material. (Category IB)
30. Consider discarding all disposable patient-care items and laundering unused linens from patient rooms after patients on isolation for norovirus gastroenteritis are discharged or transferred. Facilities can minimize waste by limiting the number of disposable items brought into rooms/areas on Contact Precautions. (Category II)
31. No additional provisions for using disposable patient service items such as utensils or dishware are suggested for patients with symptoms of norovirus infection. Silverware and dishware may undergo normal processing and cleaning using standard procedures. (Category II)
32. Use Standard Precautions for handling soiled patient-service items or linens, including the use of appropriate PPE. (Category IB)
33. Consider avoiding the use of upholstered furniture and rugs or carpets in patient care areas, as these objects are difficult to clean and disinfect completely. If this option is not possible, immediately clean soilage, such as emesis or fecal material, from upholstery, using a manufacturer-approved cleaning agent or detergent. Opt for seating in patient-care areas that can withstand routine cleaning and disinfection. (Category II)
34. Consider steam cleaning of upholstered furniture in patient rooms upon discharge. Consult with manufacturer's recommendations for cleaning and disinfection of these items. Consider discarding items that cannot be appropriately cleaned/disinfected. (Category II)
35. During outbreaks, change privacy curtains when they are visibly soiled and upon patient discharge or transfer. (Category IB)
36. Handle soiled linens carefully, without agitating them, to avoid dispersal of virus. Use Standard Precautions, including the use of appropriate PPE (e.g., gloves and gowns), to minimize the likelihood of cross-contamination. (Category IB)

37. Double bagging, incineration, or modifications for laundering are not indicated for handling or processing soiled linen. (Category II)
38. Clean surfaces and patient equipment prior to the application of a disinfectant. Follow the manufacturer's recommendations for optimal disinfectant dilution, application, and surface contact time with an EPA-approved product with claims against norovirus. (Category IC)
39. More research is required to clarify the effectiveness of cleaning and disinfecting agents against norovirus, either through the use of surrogate viruses or the development of human norovirus culture system. (No recommendation/unresolved issue)
40. More research is required to clarify the effectiveness and reliability of fogging, ultraviolet (UV) irradiation, and ozone mists to reduce norovirus environmental contamination. (No recommendation/unresolved issue)
41. Further research is required to evaluate the utility of medications that might attenuate the duration and severity of norovirus illness. (No recommendation/unresolved issue)

Staff Leave and Policy

42. Develop and adhere to sick leave policies for healthcare personnel who have symptoms consistent with norovirus infection. (Category IB)
 - Exclude ill personnel from work for a minimum of 48 hours after the resolution of symptoms. Once personnel return to work, the importance of performing frequent hand hygiene should be reinforced, especially before and after each patient contact. (Category IB)
43. Establish protocols for staff cohorting in the event of an outbreak of norovirus gastroenteritis. Ensure staff care for one patient cohort on their ward and do not move between patient cohorts (e.g., patient cohorts may include symptomatic, asymptomatic exposed, or asymptomatic unexposed patient groups). (Category IB)
44. Exclude non-essential staff, students, and volunteers from working in areas experiencing outbreaks of norovirus gastroenteritis. (Category IB)

Visitors

45. Establish visitor policies for acute gastroenteritis (e.g., norovirus) outbreaks. (Category IB)
46. Restrict non-essential visitors from affected areas of the facility during outbreaks of norovirus gastroenteritis. (Category IB)
 - For those affected areas where it is necessary to have continued visitor privileges during outbreaks, screen and exclude visitors with symptoms consistent with norovirus infection and ensure that they comply with hand hygiene and Contact Precautions. (Category IB)

Education

47. Provide education to staff, patients, and visitors, including recognition of norovirus symptoms, preventing infection, and modes of transmission upon the recognition and throughout the duration of a norovirus gastroenteritis outbreak. (Category IB)
48. Consider providing educational sessions and making resources available on the prevention and management of norovirus before outbreaks occur, as part of annual trainings, and when sporadic cases are detected. (Category II)

Active Case-Finding

49. Begin active case-finding when a cluster of acute gastroenteritis cases is detected in the healthcare facility. Use a specified case definition, and implement line lists to track both exposed and symptomatic patients and staff. Collect relevant epidemiological, clinical, and demographic data as well as information on patient location and outcomes. (Category IB)

Communication and Notification

50. Develop written policies that specify the chains of communication needed to manage and report outbreaks of norovirus gastroenteritis. Key stakeholders such as clinical staff, environmental services, laboratory administration, healthcare facility administration and public affairs, as well as state or local public health authorities, should be included in the framework. (Category IB)
 - Provide timely communication to personnel and visitors when an outbreak of norovirus gastroenteritis is suspected and outline what policies and provisions need to be followed to prevent further transmission. (Category IB)
51. As with all outbreaks, notify appropriate local and state health departments, as required by state and local public health regulations, if an outbreak of norovirus gastroenteritis is suspected. (Category IC)

Definitions:

Healthcare Infection Control Practices Advisory Committee (HICPAC) Categorization Scheme for Recommendations

Category IA	A strong recommendation supported by high to moderate quality evidence suggesting net clinical benefits
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	or harms.
Category IB	A strong recommendation supported by low-quality evidence suggesting net clinical benefits or harms, or an accepted practice (e.g., aseptic technique) supported by low to very low-quality evidence.
Category IC	A strong recommendation required by state or federal regulation.
Category II	A weak recommendation supported by any quality evidence suggesting a tradeoff between clinical benefits and harms.
No recommendation/Recommendation for further research	An unresolved issue for which there is low to very low-quality evidence with uncertain tradeoffs between benefits and harms.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Norovirus gastroenteritis

Guideline Category

Diagnosis

Management

Prevention

Risk Assessment

Clinical Specialty

Allergy and Immunology

Gastroenterology

Infectious Diseases

Preventive Medicine

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Clinical Laboratory Personnel

Health Care Providers

Hospitals

Nurses

Physician Assistants

Physicians

Public Health Departments

Guideline Objective(s)

- To address prevention and control of norovirus gastroenteritis outbreaks in healthcare settings, including implementation, performance measurement, and surveillance
- To examine and address the following key questions:
 - What host, viral, or environmental characteristics increase or decrease the risk of norovirus infection in healthcare settings?
 - What are the best methods to identify an outbreak of norovirus gastroenteritis in a healthcare setting?
 - What interventions best prevent or contain outbreaks of norovirus gastroenteritis in the healthcare setting?

Target Population

Patients and healthcare personnel in all settings where healthcare is delivered

Interventions and Practices Considered

1. Patient cohorting and isolation precautions
 - Contact precautions
 - Minimizing patient movements
 - Suspension of group activities
2. Hand hygiene
3. Consideration of ward closures and transfers
4. Considerations for food handlers
5. Adoption of policies to enable rapid clinical and virological confirmation of suspected cases
 - Kaplan's clinical and epidemiologic criteria
 - Rapid submission of specimens
 - Use of effective laboratory diagnostic protocols
6. Use of personal protective equipment
7. Environmental cleaning procedures
8. Development of sick leave policies and protocols for staff cohorting
9. Development of policies for visitors
10. Staff, patient, and visitor education
11. Active case finding
12. Development of policies for communication and notification during outbreaks

Major Outcomes Considered

- Symptoms of norovirus infection
- Stool antigen, virus, or electron microscopy results
- Sensitivity, specificity, predictive values, and likelihood ratios of diagnostic tests

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Development of Key Questions

First, an electronic search of the National Guideline Clearinghouse, MEDLINE, EMBASE, the Cochrane Health Technology Assessment Database, the National Institutes of Health (NIH) Consensus Development Program, and the National Institute for Health and Clinical Excellence, the Scottish Intercollegiate Guidelines Network and the United States Preventive Services Task Force databases was conducted for existing national and international guidelines relevant to norovirus. The strategy used for the guideline search and the search results can be found in Appendix 1A of the original guideline document (see the "Availability of Companion Documents" field). A preliminary list of key questions was developed from a review of the relevant guidelines identified in the search. Key questions were put in final form after vetting them with a panel of content experts and Healthcare Infection Control Practice Advisory Committee (HICPAC) members. An analytic framework depicting the relationship among the key questions is included in Figure 2 of the original guideline document.

Literature Search

Following the development of the key questions, search terms were developed for identifying literature most relevant to those questions. For the purposes of quality assurance, these terms were compared to those used in relevant seminal studies and guidelines. These search terms were then incorporated into search strategies for the relevant electronic databases. Searches were performed in MEDLINE, EMBASE, CINAHL, the Cochrane Library, Global Health and ISI Web of Science (all databases were searched to the end of February 2008), and the resulting references were imported into a reference manager, where duplicates were resolved. The detailed search strategy used for identifying primary literature and the results of the search can be found in Appendix 1B of the original guideline document (see the "Availability of Companion Documents" field).

Study Selection

Titles and abstracts from references were screened by a single reviewer. Full text articles were retrieved if they were 1) relevant to one or more key questions, 2) primary research, systematic reviews, or meta-analyses, and 3) written in English. To be included, studies had to measure ≥ 1 clinically relevant outcome. For Key Questions 1 and 3, this included symptoms of norovirus infection, or stool antigen, virus, or electron microscopy (EM) results. For Key Question 2, this included any study published after 1997 that reported test characteristics (e.g., sensitivity, specificity, predictive values, likelihood ratios). Outbreak descriptions were included if: 1) norovirus was confirmed as the cause by EM, polymerase chain reaction (PCR), or antigen tests AND 2) the outbreak occurred in a healthcare setting and included a list of interventions or practices used to prevent or contain the outbreak OR 3) the outbreak occurred in any setting, but the report included statistical analyses. Full-text articles were screened by two independent reviewers and disagreements were resolved by discussion. The results of this process are depicted in Figure 3 in the original guideline document.

Number of Source Documents

146 studies were included for data extraction.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Evidence Grades*

High - Further research is very unlikely to change confidence in the estimate of effect.

Moderate - Further research is likely to affect confidence in the estimate of effect and may change the estimate.

Low - Further research is very likely to affect confidence in the estimate of effect and is likely to change the estimate.

Very low - Any estimate of effect is very uncertain.

*Source: Guyatt GH, Oxman AD, Vist GE, et al. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ*. Apr 26 2008;336(7650):924-926. For more information about the grading of evidence, see the guidelines methods supplement (see the

"Availability of Companion Documents" field).

Methods Used to Analyze the Evidence

Meta-Analysis

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Data Extraction and Synthesis

For those studies meeting inclusion criteria, data on the study author, year, design, objective, population, setting, sample size, power, follow-up, and definitions and results of clinically relevant outcomes were extracted into standardized data extraction forms (Appendix 3 of the original guideline document [see the "Availability of Companion Documents" field]). From these, three evidence tables were developed, each of which represented one of the key questions (Appendix 2 of the original guideline document). Studies were extracted into the most relevant evidence table. Then, studies were organized by the common themes that emerged within each evidence table. Data were extracted by a single author and cross-checked by another author. Disagreements were resolved by the remaining authors. Data and analyses were extracted as originally presented in the included studies. Meta-analyses were performed only where their use was deemed critical to a recommendation and only in circumstances in which multiple studies with sufficiently homogenous populations, interventions, and outcomes could be analyzed. Systematic reviews were included in this review. To avoid duplication of data, primary studies were excluded if they were also included in a systematic review captured through the broader search strategy. The only exception to this was if the primary study also addressed a relevant question that was outside the scope of the included systematic review. Before exclusion, data from primary studies that were originally captured were abstracted into the evidence tables and reviewed. Systematic reviews that analyzed primary studies that were fully captured in a more recent systematic review were excluded. The only exception to this was if the older systematic review also addressed a relevant question that was outside the scope of the newer systematic review. To ensure that all relevant studies were captured in the search, the bibliography was vetted by a panel of content experts. For the purposes of the review, statistical significance was defined as $p \leq 0.05$.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Formulating Recommendations

Narrative evidence summaries are drafted by the working group using the evidence and Grading of Recommendations Assessment, Development and Evaluation (GRADE) tables. One summary is written for each theme that emerges under each key question. The working group then uses the narrative evidence summaries to develop guideline recommendations. Factors determining the strength of a recommendation include: 1) the values and preferences of the working group when determining which study outcomes are critical, 2) the risks and benefits that result from weighing the critical outcomes, and 3) the overall GRADE of the evidence base for the given intervention or question (Table 2 in the guideline methods supplement [see the "Availability of Companion Documents" field]). If weighing the critical outcomes for a given intervention or question results in a "net benefit" or a "net harm", then a Category I Recommendation is formulated to strongly recommend for or against the given intervention respectively. If weighing the critical outcomes for a given intervention or question results in a "trade off" between benefits and harms, then a Category II Recommendation is formulated to recommend that providers or institutions consider the intervention when deemed appropriate. If weighing the critical outcomes for a given intervention or question results in an "uncertain trade off" between benefits and harms, then No Recommendation is formulated to reflect this uncertainty.

For further details about the methods to formulate the recommendations, see the guideline methods supplement (in the "Availability of Companion Documents" field).

Rating Scheme for the Strength of the Recommendations

Category IA	A strong recommendation supported by high to moderate quality evidence suggesting net clinical benefits or harms.
Category IB	A strong recommendation supported by low-quality evidence suggesting net clinical benefits or harms, or an accepted practice (e.g., aseptic technique) supported by low to very low-quality evidence.
Category IC	A strong recommendation required by state or federal regulation.
Category II	A weak recommendation supported by any quality evidence suggesting a tradeoff between clinical benefits and harms.
No recommendation/Recommendation for further research	An unresolved issue for which there is low to very low-quality evidence with uncertain tradeoffs between benefits and harms.

Cost Analysis

Guideline developers reviewed published cost analyses.

Method of Guideline Validation

Comparison with Guidelines from Other Groups

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Evidence-based recommendations were cross-checked with those from other guidelines identified in an initial systematic search. Recommendations from other guidelines on topics not directly addressed by this systematic review of the evidence were included in the Summary of Recommendations if they were deemed critical to the target users of this guideline. Unlike recommendations informed by the literature search, these recommendations are not linked to a key question.

Reviewing and Finalizing the Guideline

After a draft of the tables, narrative summaries, and recommendations is completed, the working group shares this draft with the content experts for review in depth. While the content experts are reviewing this draft, the working group completes the remaining sections of the guideline, including the executive summary, background, summary of recommendations, and recommendations for guideline implementation, audit, and further research. The working group then makes revisions to the draft based on feedback from the content experts, and presents the entire draft guideline to the Healthcare Infection Control Practices Advisory Committee (HICPAC) for review. The Centers for Disease Control and Prevention (CDC) then submits the guideline for clearance, and posts it on the Federal Register for public comment. After a period of public comment, the guideline is revised accordingly, and the final guideline is published and posted on the HICPAC website.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

Explicit links between the evidence and recommendations are available in the Evidence Review in the body of the original guideline document and Evidence Tables and GRADE Tables in the Appendices (see the "Availability of Companion Documents" field). The Evidence Tables include all study-level data used in the guideline, and the GRADE Tables assess the overall quality of evidence for each question.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Effective prevention and control of norovirus gastroenteritis outbreaks in healthcare settings

Potential Harms

Not stated

Implementation of the Guideline

Description of Implementation Strategy

Implementation and Audit

Prioritization of Recommendations

Category I recommendations in this guideline are all considered strong recommendations and should be implemented. If it is not feasible to implement all of these recommendations concurrently (e.g., due to differences in facility characteristics such as nursing homes and other non-hospital settings), priority should be given to the recommendations listed in section III in the original guideline document. A limited number of Category II recommendations are included, and while these currently are limited by the strength of the available evidence, they are considered key activities in preventing further transmission of norovirus in healthcare settings.

Performance Measures for Health Departments

Use of performance measures may assist individual healthcare facilities, as well as local and state health departments to recognize increasing and peak activities of norovirus infection, and may allow for prevention and awareness efforts to be implemented rapidly or as disease incidence escalates. Evaluate fluctuations in the incidence of norovirus in healthcare settings using the National Outbreak Reporting System (NORS) (<http://www.cdc.gov/outbreaknet/nors/>). This system monitors the reporting of waterborne, foodborne, enteric person-to-person, and animal contact-associated disease outbreaks to the Centers for Disease Control and Prevention (CDC) by state and territorial public health agencies. This surveillance program was previously used only for reporting foodborne disease outbreaks, but it has now expanded to include all enteric outbreaks, regardless of mode of transmission. Additionally, CDC is currently implementing a national surveillance system (CaliciNet) for genetic sequences of noroviruses; this system may also be used to measure changes in the epidemiology of healthcare-associated norovirus infections.

Implementation Tools

Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Safety

Identifying Information and Availability

Bibliographic Source(s)

MacCannell T, Umscheid CA, Agarwal RK, Lee I, Kuntz G, Stevenson KB, Healthcare Infection Control Practices Advisory Committee (HICPAC). Guidelines for the prevention and control of norovirus gastroenteritis outbreaks in healthcare settings. Atlanta (GA): Centers for Disease Control and Prevention; 2011. 52 p. [207 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2011

Guideline Developer(s)

Centers for Disease Control and Prevention - Federal Government Agency [U.S.]

Source(s) of Funding

United States Government

Guideline Committee

Healthcare Infection Control Practices Advisory Committee (HICPAC)

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Financial Disclosures/Conflicts of Interest

The authors T.M., C.A.U., R.K.A., I.L., G.K., and K.B.S. report no actual or potential conflicts of interest. C.A.U., R.K.A., and I.L. received funding from the Centers for Disease Control and Prevention (CDC) to support the guideline development process.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the [Centers for Disease Control and Prevention \(CDC\) Web site](#) .

Availability of Companion Documents

The following are available:

- Preventing norovirus transmission: new guidelines released. CDC expert commentary. Video. Available from the [Centers for Disease Control and Prevention \(CDC\) Web site](#) .
- Updating the guideline methodology of the Healthcare Infection Control Practices Advisory Committee (HICPAC). Guideline methods supplement. Atlanta (GA): Centers for Disease Control and Prevention; 2009. 52 p. 31 p. Electronic copies: Available from the [CDC Web site](#) .
- Guideline for prevention and control of norovirus gastroenteritis outbreaks in healthcare settings. Appendices. Available from the [CDC Web site](#) .

Patient Resources

None available

NGC Status

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